

Appl. No. 10/708,783  
Amdt. dated August 9, 2005  
Reply to Office action of April 18, 2005

**REMARKS/ARGUMENTS**

1. Claims 1-4, 6, and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Steffan et al. (U.S. Pat. No. 6338001) in view of Chen et al. (U.S. Pat. No. 5862055).

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**Response:**

10 Claims 1-4, 6, and 7 have been canceled, and so are no longer in need of consideration.

- 15 2. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Steffan et al. (U.S. Pat. No. 6338001) in view of Chen et al. (U.S. Pat. No. 5862055), as applied to Claim 4 above, and further in view of Dor et al. (U.S. Pub. No. 20020072162).

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**Response:**

Claim 5 has been canceled, and so is no longer in need of consideration.

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**3. Introduction to new claim 8:**

No new matter has been introduced by the new claim 8, and the new claim 8 is fully supported by the specification and figures as filed (Paragraphs [0017], [0018]).

Claim 8 is added to describe the present application method is

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applied for monitoring a machine and product wafers are utilized as monitor wafers. The benefit of using product wafers is that problems of a monitored machine in the semiconductor process can be immediately found out. When a product wafer is selected to be 5 inspected, whether a *killer defect generated by the currently machine (the monitored machine) presents or not can be immediately detected* according to the steps of the method of the present application. Therefore, if the killer defects generated by the monitored machine present, the responsible person of the monitored machine can stop 10 the machine right now and check for the cause of the killer defect to report or solve the problem. Accordingly, the situation that problems can only be found out through a *monitor wafer* during a *daily check* while lots of product wafers has been running in the machine of the prior-art method can be avoided.

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In contrast to the present application, prior-art methods use bare wafers as monitor wafers. In the daily check, bare wafers are used to detect for checking the performance of machines. However, when killer defects produced by a certain machine are found, hundreds of 20 wafers have been run in the certain machine and which may all have killer defects. Therefore, prior-art methods take a long time to find out defects and which machine generates killer defects, and to resolve the problems.

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According to Steffan et al.'s disclosure, a method of manufacturing and inspecting semiconductor devices wherein defects on inspection wafers are tabulated (abstract). Also, the ADC is used to classify kill ratio and calculate die health (col.3,

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lines 32-42). Therefore, the function and purpose of Steffan et al.'s disclosure is for analyzing kill ratio of wafers and measuring yield of wafers and not for monitoring a machine.

5        In addition, according of Chen et al.'s disclosure, they disclose a method of determining classification codes for defects occurring in semiconductor manufacturing processes and for storing the information used to determine the classification codes (abstract). The system shown in Fig.3 stores the classification code in the ADC database as indicated at 310 (col.5, lines 18-25). Therefore, the disclosure of Chen et al. is a traditional method for storing ADC 10 information database.

15      From the above discussion, neither Steffan et al.'s disclosure nor Chen et al.'s disclosure teach a method for monitoring a machine by detecting defects of product wafers according to the application. Therefore, the applicant believes that the new claim 8 20 of the present application is absolutely different from the combination of Steffan et al.'s and Chen et al.'s disclosure. Consideration of the new claim 8 is hereby requested.

#### 4. Introduction to new claims 9-13:

No new matter has been introduced by the new claims 9-13, and the new claims 9-13 are fully supported by the specification and figures as filed.

Accordingly to claims 9-13, the adoption of product wafer in the monitor method can be in conjunction with the ADC, wherein the

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ADC has a database containing possible defect types of each machine or each fabrication process of each layer. Therefore, after detecting defects of the product wafer, pre-layer defects can be separated from the defects generated by the monitored machine 5 according to the database of the ADC, and the defects generated by the monitored machine can be immediately analyzed to determine if the detected defects contains high kill ratio defects or not. If killer defect occurs, the machine is immediately stopped for checking so that the problems of the machine can be solved. Due to the ADC is a non-destructive test, the product wafer is not influenced and can be 10 continuously run in the next fabrication process.

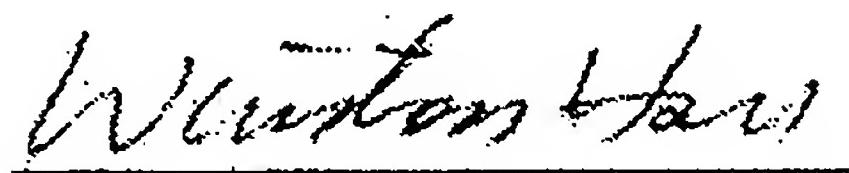
Claims 9-13 are dependent upon the new claim 8 and should be allowed if the new claim 8 is allowed. Consideration of the new 15 claims 9-13 is therefore politely requested.

Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

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Sincerely yours,



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10 Note: Please leave a message in my voice mail if you need to talk to me. (The time in D.C. is 12 hours behind the Taiwan time, i.e. 9 AM in D.C. = 9 PM in Taiwan.)